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10/767,798	01/29/2004	Neil G. Murray JR.	TRW(TE)6888	7228

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EXAMINER	
VERBITSKY, GAIL KAPLAN	
ART UNIT	PAPER NUMBER
2855	

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12/02/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/767,798	MURRAY ET AL.	
	Examiner	Art Unit	
	Gail Verbitsky	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,12-21 and 24-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,12-21 and 24-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The Previous Office Action (Examiner's Answer, mailed on 05/05/2009), is hereby withdrawn per the Board of Appeal request (09/23/2009) in order to clearly address claims 35, 36. Upon further consideration, the prosecution is now reopened.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

Claim Objections

Claims 35, 36 are objected to because of the following informalities:

Claim 35: the limitations starting with "and wherein" in line 2 are substantially redundant to the limitations of claim 25.

Claim 36: the limitations starting with "and wherein" in line 2 are substantially redundant to the limitations of claim 13.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 35-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In this case, it appears that, the limitations including a path of "a closed-curved shape" have not been described in the specification.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 35-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In this case, the claim language is confusing because it is not clear what particular means is responsible for making the path of "a closed-curve shape".

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the path of a closed – curve shape for a better understanding of the invention must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 13-15, 20-21, 25-26, 29-30, 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messler (U.S. 20040114662/ 7268866) in view of Jaret et al. (U.S. 6177649) [hereinafter Jaret].

Messler discloses in Figs. 1, 4-5 a device/ method in the field of applicant's endeavor of positioning two plastic pieces 11 and 12 to abut each other in a weld and applying a laser beam 20 continuously (plurality of times) directed onto the pieces, the plastic piece 12 is absorbent to the laser radiation (therefore, can heat the weld). An inspection radiation device 30, 31, a camera 39 and a pyrometer 58 are used during welding (7268866, as the weld being formed, col. 2, line 67, col. 3, lines 1-2) for testing of the welding process (para [0011]). The piece (second) 11 is transparent to the laser beam; therefore, the location of the abutment of two pieces is being heated by the laser beam 20. Messler also teaching to have a feedback (col. 7, line 9) to a welding apparatus (weld controller) in order to regulate the laser beam intensity/ modifying the heating if a signal (parameter/ temperature) is too high (outside desired or upper threshold or lower threshold). The device is used for obtaining a thermal data (predetermined wavelength corresponding to the IR) based on the thermal radiation 33 emanating from the weld and detected by the CCD 39 (and the pyrometer 58) of the entire weld in order to determine (parameter/ quality, col. 6, line 6) the integrity/ quality of the weld (col. 5, lines 47-67, col. 6, lines 1-8). It is inherent, that having said image of the entire weld would ensure obtaining temperature at different points of the entire weld.

The image(s) is analyzed in the evaluation unit. The pyrometer 58 is used to analyze the thermal radiation emitted by the weld, comparison with a reference, if the deviations are determined; the intensity (heat) of the laser is modified. Mirrors 23, 24 are moved to direct the laser onto the weld.

For claim 13: It is inherent, that the weld should be heated by the laser beam a plurality of time at a plurality of points in order to create a weld having a desired length.

For claim 15: It is inherent that the controller would compare the measured radiation with a threshold or desired radiation in order to determine if there is lack of quality (fails to meet the requirements), as very well known in the art.

For claim 29: the laser beam is reflected by a reflective device (mirrors).

Please note, since the weld is in between the layers, then, according to Fig. 5, the emanating radiating passing through the second layer 11 toward the CCD 39.

For claim 25: Please note, that the laser is constantly directed (plurality of times) onto the weld, and that the modifying of the heating by laser would also take place during that directing.

For claims 35-36: making the path of closed-curve shape, absent any criticality, is only considered to be an obvious modification of the shape disclosed by Prior Art because the court has held that a change in shape or configuration, without criticality, is within the level of skill in the art as the particular shape claimed by applicant is nothing more than one of numerous shapes that a person having ordinary skill in the art will find obvious to provide. *In re Dailey, 149 USPQ 47 (CCPA 1976).* (Please note, the rest of claims 35 and 36 are redundant to claims 13 and 25 respectively).

The method step will be met during the normal operation of the device stated above.

Although the CCD camera receives thermal radiation from the weld, Messler is not clear if the CCD is acting as a thermal camera providing a thermal image. Messler does not explicitly teach that the thermal data provided by the pyrometer is in the form of thermal images.

Jaret discloses a device in the field of applicant's endeavor comprising a camera 6 producing thermal images of the weld during welding.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Messler, so as to have a thermal camera (or replace the pyrometer with the thermal camera, or modify the CCD to enable it to produce thermal images), as taught by Jaret, in order to provide the operator not only with the visual data of the weld, but also with the image of thermal data of the weld, in order to allow the operator to take necessary actions, if one area is heated less than another.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Messler and Jaret, as applied to claims 1-4, 13-15, 20-21, 25-26, 29-30, 35-36 above, and further in view of Hashimoto.

Messler and Jaret disclose the device/ method as stated above.

They do not explicitly teach an alarm.

Hashimoto discloses in Fig. 1 a method/ device for monitoring quality of a weld comprising heating the weld and immediately (substantially simultaneously) acquiring a

thermal distribution signal on another side of a second piece (col. 2, lines 25-33). The device also has a feedback control for analyzing the data and determining if the data meets an associated criterion and modifying the heating/ cooling and providing a warning signal/ alarm.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add an alarm, disclosed by Messler and Jaret, so as to notify the operator about failure and to allow the operator to control defects, lack of integrity of the weld caused by improper welding process/ improper heating by controlling the weld temperature within predetermined (desired/ standard) limits. The method step will be met during the normal operation of the device stated above.

Claims 7, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messler and Jaret, as applied to claims 1-4, 13-15, 20-21, 25-26, 29-30, 35-36 above, and further in view of Schepard(U.S. 20020172410).

Messler and Jaret disclose the device/ method as stated above.

They do not explicitly teach the limitations (determining width) of claims 7 and 18.

Schepard discloses a device in the field of applicant's endeavor, the device can be used to determine the size (thus, inherently, width) of the weld and the quality (presence of cracks, voids, defects, discontinuities) of the bond (col. 7, lines 1-2) and, inherently, compare them to the threshold (standard) by means of the histogram.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a feature capable of determining the size of the weld, as taught by Schepard, so as to control the size of the weld, and thus the quality of the weld, because the proper weld size is very important in some miniature applications.

The method step will be met during the normal operation of the device stated above.

Claims 8, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messler, Jaret and Schepard, as applied to claims 7, 18 above, and further in view of Traub.

Messler, Jaret and Schepard disclose the device/ method as stated above.

They do not explicitly the limitations of claims 8 and 19, i.e., determining that a parameter (width) is outside of the threshold.

Traub teaches a device / method in the field of applicant's endeavor wherein, in an automatic mode, a thermal signal (parameter) from a weld is compared to a signal recorded in memory (reference/ threshold), if the signal is higher or lower than the reference (does not meet an associated criterion), welding parameters are being adjusted by a (feedback) control circuitry (weld controller).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the controller of the device, disclosed by Messler, Jaret and Schepard, so as to have a feedback weld controller, as taught by Traub, in order to enable the device not only to detect failure but also to implement corrective functions.

The method step will be met during the normal operation of the device stated above.

Claims 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messler and Jaret, as applied to claims 1-4, 13-15, 20-21, 25-26, 29-30, 35-36 above, and further in view of Ish-Shalom et al. (U.S. 6299346) [hereinafter Ish-Shalom].

Messler and Jaret disclose the device and method as stated above.

They do not teach the limitations of claims 24 and 28.

Ish-Shalom discloses a device wherein in order to obtaining a correct temperature (thermal data) of a test sample (wafer), IR wavelengths from the heating lamps cut off (filtered).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device, disclosed by Messler and Jaret, so as to cut off the heating radiation from the final thermal data results, as taught by Ish-Shalom, in order to preserve the accuracy of the thermal data, as already suggested by Ish-Shalom.

The method steps will be met during the normal operation of the device stated above.

Claims 5-6, 16-17, 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messler and Jaret, as applied to claims 1-4, 13-15, 20-21, 25-26, 29-30, 35-36 above, and further in view of Schepard (U.S. 200201724410).

Messler and Jaret disclose the device and method as stated above.

They do not explicitly teach a plurality of images and determining time of taking an image.

Schepard teaches to obtain (plurality) thermal images over time and sample them over time in order to reconstruct the entire image. This would suggest that Schepard determines the time of taking the particular image. It is inherent, that Schepard would not take any images after the full image reconstructed, and there is no need to take more images.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device/ method disclosed by Messler and Jaret, so as to take an image at a time, as taught by Schepard, in order to obtain a time temperature function which would allow the operator to determine heat conductivity/ diffusion of the weld and thus, it's quality, as very well known in the art.
The method step will be met during the normal operation of the device stated above.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Messler and Jaret, as applied to claims 1-4, 13-15, 20-21, 25-26, 29-30, 35-36 above, and further in view of Sandvoss.

Messler and Jaret disclose the device and method as stated above.

They do not explicitly teach the limitations of claim 27.

Sandvoss discloses a device/ method in the field of applicant's endeavor comprising heating a weld with a laser beam. The laser heat can be regulated by intensity, duration or speed of the moving laser beam (col. 3, lines 4-7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the IR thermal data means, disclosed by Messler

and Jaret, so as to regulate heating by varying duration, intensity or the speed of the laser beam, as taught by Sandvoss, so as to provide the operator with an appropriate method of regulating of the heat, as very well known in the art.

The method step will be met during the normal operation of the device stated above.

Response to Argument

For claim 1: Applicant states that in Messler, the inspection radiometer 30 and pyrometer 58 are completely independent in functional sense. Appellant states that Messler does not teach "obtaining a thermal image as a weld being formed by collecting IR passing through a second piece of material from the weld and pool of material". These arguments are not persuasive because, as indicated in the rejection, although Messler uses pyrometers, the thermal radiation is also obtained by the CCD camera 39, as shown in Fig. 5, by collecting radiation from the pool of material and weld, the radiation passing through the second (transparent) piece 11. The fact that the device may operate independently does not mean teaching away from the claimed invention. Applicant states that the radiometer 30 obtains data only from a solidified melt, the radiometer 58 obtains data only from unsolidified melt (no "simultaneously", as claimed by Applicant). This argument is not persuasive because in col. 2, line 65, Messler states that the measures of IR "can be … used not only the welding operation ", this statement would imply that "during (simultaneously) the welding operation" itself is included. Appellant states that Jaret does not cure the deficiencies of Messler. This argument is not persuasive because in the rejection of the merits, the Examiner uses Jaret as a

secondary reference only for its teaching that the thermal radiation from the weld could be provided to the operator in the form of the thermal image.

For claim 3: Applicant states that the combination of Messler and Jaret do not teach that the pool is entirely within the FOV of the IR detector (detecting radiation from the weld and pool). This argument is not persuasive because, according to Fig. 5 of Messler, the entire weld pool is within the FOV of the CCD 39. As far as "detecting radiation from the weld and pool" concerns, although this Applicant's limitation is covered by Fig. 5 of Messler, this limitation is not stated in claim 3. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

For claim 13: Applicant states that the combination of Messler and Jaret do not suggest directing the laser beam over the path of a weld pool multiple times". Applicant adds that the Examiner interpretation that the continuous mode of the beam could be considered as applying the beam multiple times over a period of time is wrong.

The Examiner respectfully disagrees. Any signal provided continuously over time could be considered as a plurality of point signals over time, unless Appellant defines the laser beam as, for example, a plurality of discrete beams.

Applicant states that the beam 50 of the instant invention is directed over the same points on the path multiple times. This argument is not persuasive because this limitation is not stated in claim 13. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

For claim 33: Applicant states that Schepard does not teach stopping the obtaining of thermal images of the weld after the weld is formed. That Schepard does not have an "element" to perform this function. Applicant states that "under doctrine of inherency, the element is not expressly disclosed". This argument is not persuasive because Sheppard, inherently, has at least a power button which would be responsible for turning the device on/ off when necessary. In addition, it is a common sense in stopping taking measurements or using the equipment when the operation is completed. For example, one would stop taking the images of the parade when the parade is over. Applicant states that Schepard does not stop taking images after the weld is done. That Schepard only stops when the weld is done and cooled. Even in this interpretation, Schepard does not teach away from the claimed limitation since Schepard stops taking images after the weld done (as claimed by Applicant) and after the weld cooled (an additional feature: in response to Applicant's argument that the reference includes an additional feature not required by Applicant's invention, it must be noted that the reference discloses the invention as claimed. The fact that it discloses additional feature not claimed by Applicant is irrelevant) versus stopping taking images during the weld.

Claims 35-36 are now addressed, see the above 103 rejections.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gail Verbitsky whose telephone number is 571/ 272-2253. The examiner can normally be reached on 7:30 to 4:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lisa Caputo can be reached on 571/ 272-2388. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gail Verbitsky
Primary Patent Examiner, TC 2800

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